

Integrated Applications

UNIT 10 TRANSACTION PROCESSING

SYSTEMS-I: HUMAN RESOURCE AND MARKETING MANAGEMENT

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10.1 INTRODUCTION

Management information system, in general, consists of all business transactions of the organization. Every information system has many subsystems like transaction processing system, decision support system, office automation system etc., to have a larger utility of database created for business analysis. Data stored in the form of computer database need to be retrieved properly to satisfy the information requirement of different operational areas of management. The decision makers do retrieval of information from the master data through a set of well-defined tools. For example, to calculate the net salary of an employee, we need to supply different inputs like basic salary, number of days present, existing DA, and HRA levels. Accounts department uses this information to calculate the final receivable salary of an employee. This process is called transaction process of the data for payroll calculation. As this is a part of the information system, it can be called as a subsystem. Preparation of transaction documents such as pay slips, invoices, and receipts is important and routine task performed in managerial functions. The general view of transaction processing system is shown below:

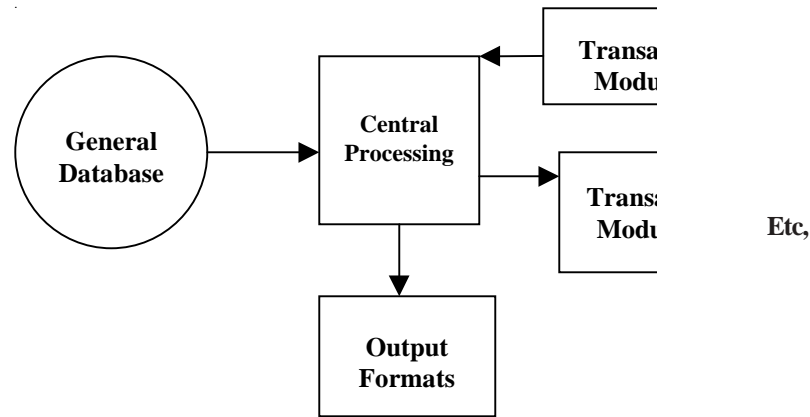


Figure 10.1: General View of Transaction Processing System

**Information System** To get the desired information through the specific tools of management is called transaction process. As applicable in other cases, different areas of management like HRM, Finance, Operations, and Marketing have various business data processing and hence the sub systems to generate required output are needed.

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## 10.2 OBJECTIVES

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After reading this unit you should be able to:

- Describe the role of transaction processing system in managerial functions;
- Identify transaction modules in a subsystems;
- Integrate subsystems to get desired output;
- Discuss the subsystems in Human Resource Management;
- Explain the subsystems in Marketing; and
- Enumerate the advantages of computer oriented transaction processing.

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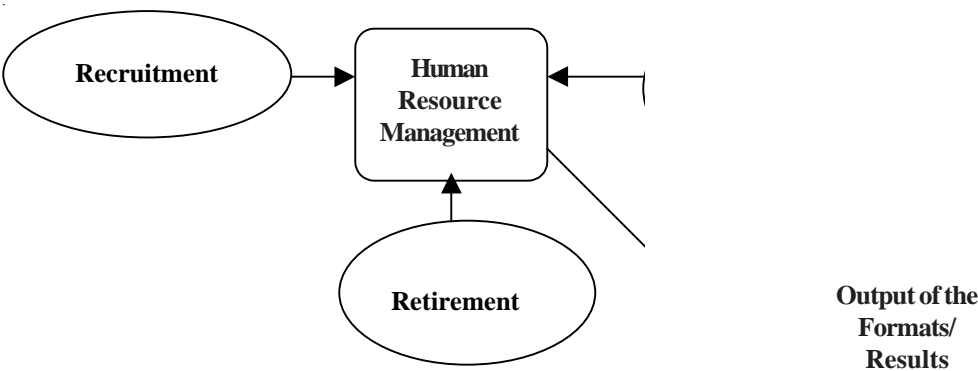
## 10.3 HUMAN RESOURCE MANAGEMENT SUB-SYSTEM

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In Human Resource Management, the Personnel Manager has the responsibility of executing multifarious activities pertaining to recruitment, training of the employees, retirement benefits of the employees etc. Planning, executing, and controlling of these activities about the existing employees is carried out by the personnel manager through the information system called personnel information system developed for this purpose. The personnel information system deals with the flow of information about people working in the organization as well as future personnel needs. In most of the organizations, the system is concerned primarily with five basic subsystems of the personnel function: recruiting, placement, training, compensation, and maintenance.

Let us discuss three of these subsystems separately:

- 1) Recruitment
- 2) Retention/Service Conditions
- 3) Retirement



**Figure 10.2: Transaction Modules in Human Resource Management**

10.3.1 Recruitment

Role of personnel department starts with recruitment of personnel. If properly managed, the recruitment system forecasts personnel needs and skills and recruits the personnel at the proper time to meet organizational needs. Personnel department on the basis of retirements/resignations either identifies requirements, or concerned department sends requirement to personnel department. On the basis of the requirements, personnel department initiates process of recruitment, which is divided into the following steps:

- Finalizing the requirement for various posts
- Publicity as per requirement
- Receipt of application forms from candidates
- Initial screening
- Interviews
- Final selection
- Issuing appointment letters

Development proper information system giving the necessary inputs for generation of reports pertaining to the above cases lead to a subsystem for this purpose.

10.3.2 Retention/Service Conditions

This is an important aspect in the functioning of personnel department. Personnel department maintains records of all the employees about the nature of the job, department etc. The major activities undertaken and related data requirements here are:

- Training/ Seminars/Refresher courses for employees
- Job
- Promotion
- Increments
- Leave Accounting
- Performance Reports
- Salary/Compensation
- Organizational Structure
- Job Description
- Liaison

Information on each of the areas is compiled from the master database created and made available in the organization.

10.3.3 Retirement

Personnel department keeps track of retiring employees. It completes all the formalities necessary and issues orders for providing retirement package through account department. The calculation requires various inputs about the employees from the personnel records.

There are other subsystems also like Compensation & Maintenance etc. Another interesting subsystem could be Skills inventory program, which identifies and locate the talent resources of the organization to maximize their use. The concept of “Skill banks” or “manpower assessment program” is applied. This could be one of the subsystems to develop and support the main system.

10.3.4 Advantages of Computerization

Consider an organization where there are more than one hundred employees. In such an organization, the staff of personnel department has to do a lot of paperwork to keep record of courses, seminars, previous experience etc. for all the employees. It is a voluminous task. During the process of maintenance of individual records, leave details, course appraisal reports etc. at least one folder per employee is maintained in

### **Information Systems**

Also, if a large number of folders are opened for various welfare activities. Personnel department also has to look after legal side i.e. implementation of industrial rules and regulations, liaison with employee unions and follow civil suits in courts etc. Thus a lot of data needs to be stored and number of files are opened and used continuously. Also information on employees is sought very frequently for the employees themselves as well as for other departments. Most of the time staff has to search the information kept in different files under a number of enclosures.

On computerization of personnel management system, on-line data will be available and outputs can be taken in desired formats. Queries can be put to get required information. Thus a lot of time is saved which can be utilized effectively for additional welfare activities for employees.

Further, the data pertaining to personnel information about the employees are confidential in nature. In manual system there is always the possibility of unauthorized access to these data. With the computer system, the access can be controlled through the password and hence the confidentiality can be maintained.

Let us make a comprehensive list of uses of computers in HR area.

The main uses to which computers can be put in human resource departments are:

**Keeping Records:** Replacing card indexes and filing cabinets by compact discs.

**Listings:** Quickly providing listings of employees by department, occupation, grade, pay level, length of service, age, sex, qualifications, skills, etc.

**Automatic Letter Writing:** Producing standard letters and forms for recruitment, promotion, transfer, upgrading, appraisal, pay review and new contracts of employment.

**Manpower Planning:** Using manpower data to forecast the future demand and supply of people. Manpower models can be used, for the following **forecasting model** for examining a hierarchy of grades by age. Useful for gaining general understanding of future movement of staff and changes in age/grade structure

**Labour Turnover Analysis:** Providing labour turnover statistics.

**Career Development:** As a development of manpower planning models, computerised personnel information can be used to improve succession planning.

**Recruitment:** The computer can, in effect, be used as a filing cabinet to store details of cash applicant, date of receipt of application, when called for interview and the outcome. If an applicant contacts the company, he can be informed of the progress of his application. Managers can be given details of the number of applicants and how many have been interviewed, Lists and automatic letters can be produced when calling for interview rejecting applicants or making offers.

**Training:** Records can be kept to check on who has received training or on progress through other training schemes. Listings of skills and qualifications by department or occupation can be produced to identify gaps and training needs.

**Pay:** Information can be drawn from both personnel and pay-roll systems to analyse pay-roll costs and ratios and to assess the impact of various pay increase options on the pay structure and on total pay-roll costs. Budgetary control systems can be computerised to show actual pay-roll costs against budget and project future costs.

**Salary Administration:** Salary analysis reports can be produced which give information by employee on occupation, salary position in salary range, total percentage increases over previous years and annual appraisal. Individual forms and departmental schedules can be generated for salary reviews and analysis can be made of the salary structure (e.g. comparisons).

**Job Evaluation:** Data bases can be created to hold and process job evaluations, such as grades and point scores. Weightings of job evaluation factors can be determined by multiple regression analysis and the recording and analysis can be computerised. In a job evaluation exercise, the information system can be used to point out the names of those whose jobs are to be evaluated. Details of job, grade, function, location, sample size and current point ratings can be programmed in. The data base can link together similar posts in different parts of the organisation. Listings of all gradings, re-gradings and points/scored can be produced.

**Absence and Sickness:** Absence and sickness can be recorded by employee, with reasons and analysis can be produced of absenteeism and sickness.

**Health and Safety:** Records can be maintained on accidents and absence due to health hazards. Trends can be analysed and information produced on who has worked in certain areas, or who has used certain processes and for how long.

**Activity A**

Critically evaluate the use of computers by your organization for Human Resource Management decision-making.

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## 10.4 MARKETING MANAGEMENT SUB-SYSTEM

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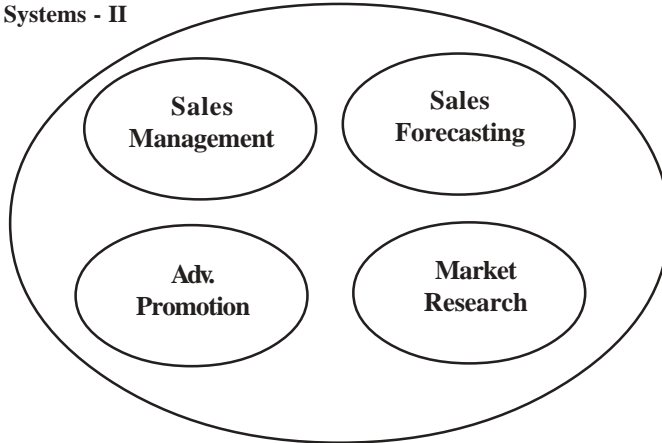
As we have seen in the previous unit, the business function of marketing deals with different activities like planning, promotion, and sale of existing products and exploring the market trend for the existing and new products. Information system specially designed taking into account all these factors can only supply the required competitive information for the benefit of customers and management.

Different categorical decision systems like strategic, tactical and operational information help in the activities of the marketing managers in product planning, pricing of the product, planning for advertising, sales promotion and expenditure, forecasting market potential for new and existing product and deciding about the distribution channel etc.

Control reporting systems support the efforts of marketing mangers to control the efficiency and effectiveness of selling and distribution of products and services. Analytical reports provide information on firm’s actual performance versus planned marketing objectives.

The major marketing subsystems are:

- Sales Management
- Sales Forecasting
- Advertising and Promotion
- Marketing Research



**Figure 10.3: Transaction Modules in Marketing Area**

### 10.4.1 Sales Management

Sales Management system provides information to help sales managers plan and monitor the performance of the sales organization. In most firms, this system produces sales analysis reports, which provide information analysis of:

- a) Product sales trends,
- b) Product profitability on a product-by-product basis,
- c) The performance of each sales region and sales branch,
- d) Sales persons performance.

To fully support the sales systems, invoices should contain information about product type, product quantity, price discount terms, customer identity and type, sales region and sales person.

The sales reports must contain information about the profitability of products, product lines, sales territories, and individual salespersons. Profitability reporting requires information about product administration and selling costs.

The sales analysis system also provides information used to evaluate the performance of sales personnel. By reclassifying sales by sales person rather than by product or sales unit, it is easy for the sales supervisors to identify whether each salesperson has met the assigned sales quota. If marginal costs are also assigned by salesperson, each salesperson's contribution margin can be established as one criterion for performance evaluation.

The primary types of information as inputs used for the sales analysis subsystem are:

- i) Information about customer invoices and back orders that is provided by the sales transaction processing systems,
- ii) Information derived from the oral and written reports of sales personnel,
- iii) Product cost information obtained from the cost accounting information systems,
- iv) Information about the sales transactions may be available from the sales files or the customer files.,

### 10.4.2 Sales Forecasting

Sales forecasting is important for planning sales and promotion strategies and for post period evaluation of salesperson's performance. Sales forecasts are generally the

first step in the profit planning cycle of the entire organization e.g. Integrated Applications short-term financial and marketing planning cycles. If forecasts for the period are seriously in error, the organizations entire budgeting activity will be based upon the wrong level of activity.

The basic functions of sales forecasting can be grouped into the two categories of short-range forecasting and long-range forecasting. Short-range forecasting deals with forecasts of sales for periods up to one year, whereas long-range forecasting is concerned with sales forecasts for a year or more into the future. Forecasting requires the application of mathematical and statistical methods, which consists of structured procedure. Methods like time series analysis, regression models etc., are used for sales forecasting.

Production planning, work force planning, and production scheduling are based on sales forecasting. Materials are ordered and personnel are employed and reassigned according to the expected sales pattern for the next period. If sales are overestimated either finished product inventory levels or materials inventory will be excessive, or personnel will have to be laid off. Conversely, if the sales forecast is too low, either sales would be lost because of inventory shortages, or higher costs will be incurred as a result of overtime and need to secure additional materials in a hurry.

The basic information needed for sales forecasting is as follows:

- i) Past sales, provided by the sales analysis information system
- ii) Market conditions, provided by the market information system
- iii) Competitor's activities provided by the competitor intelligence information system
- iv) Promotion and advertising plans, provided by the information system for this function.

### **10.4.3 Advertising and Promotion Information System**

Promotion and advertising department within marketing devotes its attention to planning and executing advertising campaigns and to carry out various product promotions such as package coupons, contest, special sales and trade shows. This department's activities are focused on increasing sales revenue without an equivalent increase in costs.

Marketing managers need information to help them achieve sales objectives at the lowest possible costs for advertising and promotion. Sales analysis provided by the sales information system can assist the advertising and promotion group by highlighting trends that may influence the allocation of promotion and advertising expenditures. Additionally, a time series sales analysis that correlates advertising and promotion activities with subsequent sales will indicate which are the most effective promotion campaigns for particular products.

The market research information system can supply the promotion and advertising information system with information about market size and about characteristics for each product for the market. This is helpful for tailoring promotion to specific market segments.

The promotion and advertising information system should be storehouse of information that helps mangers build on past experience with promotion and advertising. By systematically organizing and analyzing this information, an organization can eventually establish a body of knowledge about what the market is like and how it responds to each of several types of promotional activities for each product. However, the complexities of markets can change rapidly, and the information systems already described should continuously 'refresh' and modify this promotion and advertising information base in light of the most current information available.



10.4.4 Market Research

Market research focuses on the entire market for an organization’s product. One purpose of market research is to assess the overall size of the market for each product line and for each product within a product line. Potential market size can change rapidly as economic conditions and technology change.

The market research information system provides marketing intelligence to help managers to make more effective decisions. It also provides marketing managers with information to help them plan and control the market research projects of the firm.

The key information needs for a market product potential analysis are:

- i) Information about the economy and economic trends and the probable impact of these trends on demand for the product
- ii) Information about past sales and sale trends for the entire industry and
- iii) Information about competing ‘substitution’ products.

Usually the market research department assumes responsibility for gathering and analyzing this information.

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10.5 USE OF COMPUTERS IN MARKETING MANAGEMENT

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Computers and statistical analysis software help the market research activity collect, analyze, and maintain information on a wide variety of market variables that are subject to continuous change. This includes information on customers’ prospects, consumers, competitors; market economic and demographic trends. Data can also be gathered through telemarketing and computer aided telephone-interviewing techniques (CATI).

The main benefits derived from computer- based marketing information system are:

- 1) Control of market costs
- 2) Diagnosis for poor sales performance
- 3) Management of fashion goods
- 4) Forecasting
- 5) Promotional planning and corporate long-range planning
- 6) Purchasing

Activity B

Prepare a brief report on the market planning and publicity planning of your organization, and the role computers and MIS can play in that

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## 10.6 SUMMARY

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In this unit, you have learnt about the role of transaction processing in data retrieval. Two important areas of the functional management say marketing and human resource management. As each of the sub-systems perform specific operations/ transactions to support the main system, various inputs required for these subsystem have been discussed in detail. By now you have come to know how the development of the system require to be assisted by the different subsystems in the transaction process.

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## 10.7 UNIT END EXERCISES

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- 1) Identify the role of transaction processing system in the development information system.
- 2) Suggest few modules, you would like to add to improve the Marketing Information System.
- 3) List the analytical methods, which could be used effectively in the modules of human resource management for the development of subsystem.
- 4) How does computerized Personnel Information systems help in managing human resources more efficiently?

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## 10.8 REFERENCES AND SUGGESTED FURTHER READINGS

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Course material designed by IGNOU for the programs of Computer and Information Sciences.

Murdick, and Thomas C. Fuller. "Subsystems for MIS". *Journal of Systems Management*, June 1979.

Murdick, Robert G. *MIS: Concepts and Design*. Englewood Cliffs, N.J. Prentice-Hall, 1980

Robert G. Murdick, Joel E. Ross and James R Claggett. *Information Systems for Modern Management*, Prentice Hall of India, 1997